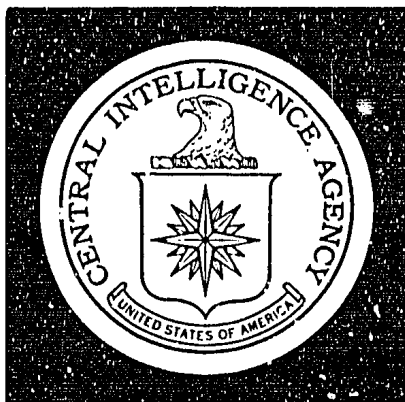


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DIRECTORATE OF  
INTELLIGENCE

# Intelligence Memorandum

*World Bauxite Industry: Recent Trends And Implications  
Of Guyana's Nationalization Moves*

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ER IM 71-55  
April 1971

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CENTRAL INTELLIGENCE AGENCY  
Directorate of Intelligence  
April 1971

INTELLIGENCE MEMORANDUM

World Bauxite Industry:  
Recent Trends And Implications  
Of Guyana's Nationalization Moves

Introduction

1. Marketing patterns and investment plans of the world bauxite industry are being threatened by nationalist stirrings in the Caribbean area, the major world supplier. Prime Minister Forbes Burnham of Guyana has decided to nationalize a large bauxite-producing subsidiary of the Aluminum Company of Canada and probably will also move eventually against a smaller operation owned by Reynolds Metals Company. This memorandum reviews recent trends in the world bauxite industry and assesses the importance of Guyanese deposits. It also examines the implications of Burnham's moves for Guyana and other Caribbean countries and for world bauxite supplies and aluminum prices over the next several years. The possible role of the Communist countries if the companies boycott Guyanese bauxite also is discussed.

Conclusions

2. Guyana's contribution to Free World bauxite output has dropped from 24% to 8% since 1950 and probably will decline further during 1971-75, whatever the outcome of its nationalization action. Current bauxite industry plans call for continuing rapid output expansion over the next five years, with the principal gains to take place in Jamaica, Guinea,

*Note: This memorandum was prepared by the Office of Economic Research and coordinated within the Directorate of Intelligence.*

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and Australia -- possessors of 60% of assured Free World bauxite reserves. The probable repercussions of Guyana's action on other Caribbean countries almost certainly will cause the industry to reconsider these plans; investments may well be slowed in Jamaica and accelerated in Australia, Guinea, and elsewhere.

3. Although the two companies operating in Guyana may be willing to compromise a little on the compensation issue to retain their bauxite supplies, Burnham's bargaining position seems relatively weak. Guyana depends on bauxite for nearly half of its export revenues; Alcan and Reynolds have alternative sources of supply; and an adamant stand would risk a boycott of Guyanese output by the six large, vertically integrated companies that dominate the Free World industry. Moreover, Guyana probably cannot operate the mines unaided and would find it difficult to market its output in most Free World markets if the companies were trying to prevent it.

4. Guyana's only real alternative to satisfying the companies' demands for compensation may be to seek markets in Japan and the USSR, both of which are large bauxite importers. Guyana might lose less by paying satisfactory compensation than by selling to Japan and the USSR because they may not buy the current level of output. Moreover, Japan probably would insist on substantial price discounts, and the USSR may not pay in hard currency. The threat of denying bauxite to the major Free World aluminum companies does not provide Guyana with an important lever in bargaining this year because excess bauxite production capacity exists in the short-run. Over the longer term, the companies probably can replace their supplies by expanding output in Jamaica, Australia, and elsewhere.

5. The impact of Guyana's nationalization moves on the Caribbean area depends heavily on the outcome of the government's maneuverings on the compensation issue. If Guyana appears to win significant economic benefits, Free World aluminum companies will face demands for increased profit shares and perhaps partial nationalization from other Caribbean producers -- especially Jamaica, where the industry's investment stake is far larger. On the other hand, if economic benefits are small because of compensation payments -- or if the economy is actually set back by a breakdown

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in negotiations and consequent company boycotts of Guyanese bauxite -- the demands of the Caribbean countries will be tempered, although not necessarily ended.

6. In any case, increased demands for greater profit sharing in other Caribbean countries will probably exert upward pressure on bauxite costs and aluminum prices over the next several years, especially in North America. Moreover, if Guyana's action leads to a shift in bauxite investments in favor of Australia, Africa, and other countries, bauxite transport costs to North America might also rise, adding further to upward pressure on aluminum prices.

DiscussionWorld Production and Marketing

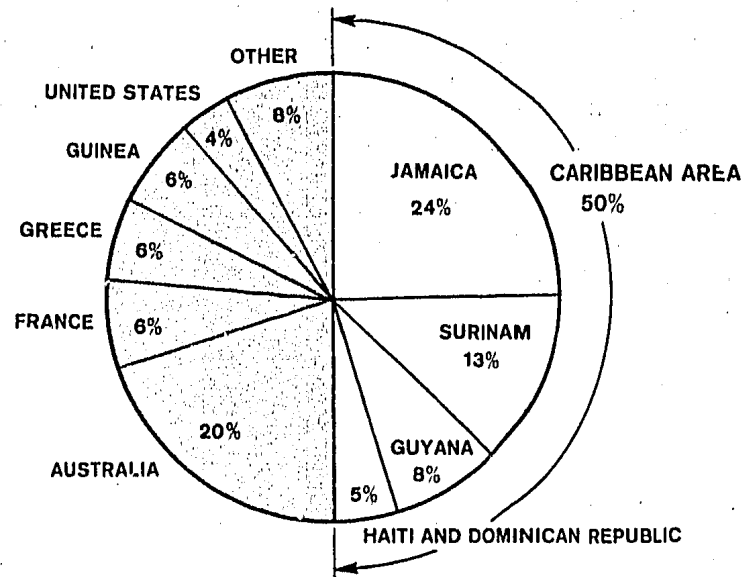
7. The Caribbean area now accounts for 50% of Free World bauxite production (see Figure 1). Australia's output has been increasing rapidly since the mid-1960s and its world share reached 20% in 1970. The remaining production is divided about evenly among (a) the rest of the Western Hemisphere (the United States and Brazil), (b) Western Europe (mainly France), (c) Africa (mainly Guinea), (d) the Middle East (Greece), and (e) Asia. The United States and Canada, with 56% of the Free World's primary aluminum smelting capacity, together make up the principal bauxite market. The Caribbean area supplies about 75% of their joint bauxite requirements; the remainder comes mainly from the United States and, to a lesser extent, Australia. Western Europe, with one-fifth of Free World primary aluminum capacity, and Japan, with about 12%, absorb almost all the remaining Free World bauxite supply.

8. Communist bauxite production -- concentrated in the USSR, Yugoslavia, and Hungary -- is equal to 22% of Free World production, a little more than Australian output. As a group, the Communist countries are small net importers of bauxite from the Free World. Yugoslav exports to West Germany and Italy are more than offset by Soviet imports (mainly from Greece and the United States, and about half in the form of

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Figure 1

**Free World Bauxite Production, by Major Country****1970**

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alumina). The USSR, with a rapidly expanding primary aluminum capacity second only to the United States, is the principal bauxite consumer. It provides Western Europe and Japan with about 3% of their combined aluminum supplies.

9. Free World bauxite supply and demand are largely controlled by six large vertically integrated North American and West European aluminum companies. These firms own -- wholly or partly -- nearly all Free World bauxite mines, about 80% of primary aluminum capacity, and a substantial share of aluminum fabricating facilities. The largest is the Aluminum Company of Canada (Alcan), about 50% owned by US residents. The others are the Aluminum Company of America (Alcoa), Reynolds Metals Company, and Kaiser Aluminum and Chemical Corporation; the French-owned Pechiney Compagnie de Produits Chimique et Electrometallurgiques (Pechiney); and the Swiss-owned Schweizerisches Aluminum A.G. (Alusuisse).

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10. These companies generally have tried to control their own bauxite sources. Before World War II this control was used to restrict entry into the industry. Since the war, government pressure on the major producers to sell to other firms has helped to facilitate the entry of a number of smaller US, West European, and Japanese firms, mainly aluminum fabricators. The industry thus has become a little more competitive, although the newer firms remain heavily dependent on the six majors for bauxite. A number of the smaller firms are now gaining more direct access to bauxite supplies by joining the majors in exploiting deposits in Australia and Guinea.

11. As a consequence of this vertical integration, there is no world bauxite commodity exchange with freely fluctuating prices such as exists for copper, for example. Most sales are intra-company and are valued at conventional accounting prices that change infrequently. During 1965-70 these prices ranged from \$4 to \$8 per ton (f.o.b.) for most countries. In Guyana and Surinam, prices of \$8 to \$10 per ton (f.o.b.) reflect higher production costs and the exceptionally high quality of their ores.

12. Because the aluminum companies' control of bauxite markets is so pervasive, the bargaining power of the less developed countries that produce bauxite traditionally has been weak. The companies generally have had a free hand in making production and processing decisions, and taxes and royalties have not been significant burdens. Expansion of alumina-refining facilities in Jamaica, Surinam, and Guyana in the last few years probably has been motivated as much by the desire to save on transport costs\* as by the countries' request to provide more jobs. The Caribbean countries have been dissatisfied in recent years with their tax receipts, which they believe have been arbitrarily restricted by the companies' pricing policies. Nevertheless, these countries' demands for higher tax and royalty rates generally have been moderate for fear of discouraging company investment plans. Although Guyana proposed in late 1970 that

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\* Commercial-grade bauxite generally ranges from 40% to 60% alumina. Refining near the source reduces shipping costs by an average of about 50%.

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the Caribbean countries act in concert to raise prices, other producers so far have shown little interest.

Production Trends Since 1950

12. Free World bauxite production has grown rapidly over the past two decades, in response to the sharply rising demand for aluminum brought about by the metal's versatility and price stability compared with copper, its main competitor in many uses. Bauxite production rose from 6½ million tons\* in 1950 to about 45 million tons in 1970 (see Figure 2). In Communist countries, despite a more rapid rise in aluminum output than in the Free World, bauxite production has grown somewhat slower, rising from 1½ million tons to 10 million tons during the past 20 years. Output in Yugoslavia and Hungary has increased more rapidly than in the USSR, but the USSR still accounts for half of Communist output.

14. Stimulated by the Korean War and US government stockpiling of both bauxite and aluminum, Free World bauxite output increased an average of 14% annually during 1951-56 (see Figure 3). Production grew a little less rapidly during 1957-62 and declined in 1963, largely as a result of an inventory accumulation following cuts in aluminum output in 1957 and again in 1961. Since 1963, bauxite production has risen an average of about 10% annually as aluminum output rebounded with the general resurgence of the US economy and the cutting of aluminum prices by the major companies (see Figure 3). Despite the long leadtimes usually required to build infrastructure for major new deposits, the companies' policy of establishing new supply sources well in advance of need has helped the industry to avoid significant shortages.

15. Since 1950, older supply sources -- the United States, Western Europe, and the Caribbean area -- have decreased in importance, while more distant sources -- Africa, the Middle East, and

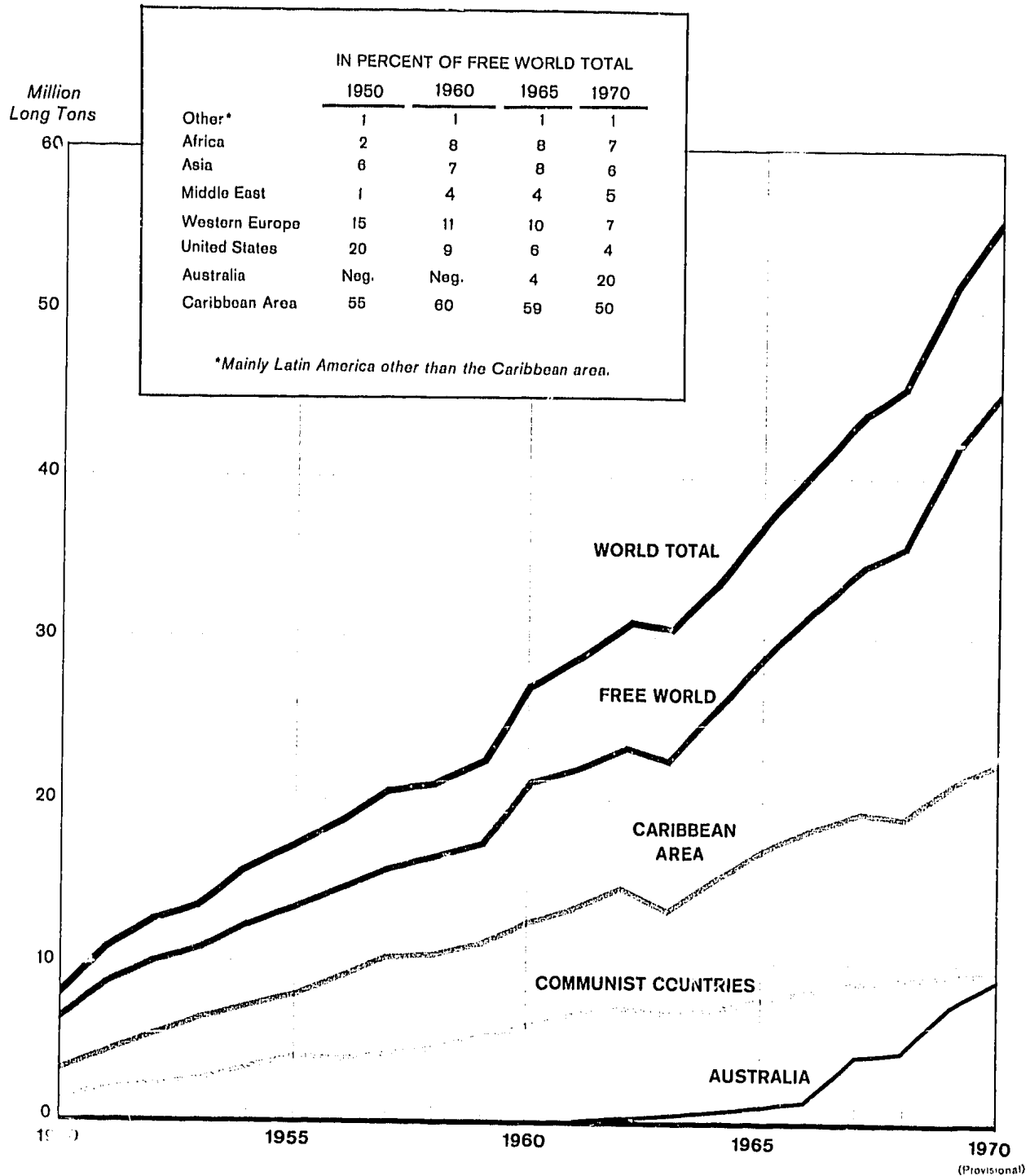
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\* Tonnages are given in long tons throughout this memorandum. The production figures are shown in dry bauxite equivalents of crude ore and thus may be 10%-15% lower than figures shown in other sources.

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Figure 2

**World Bauxite Production**

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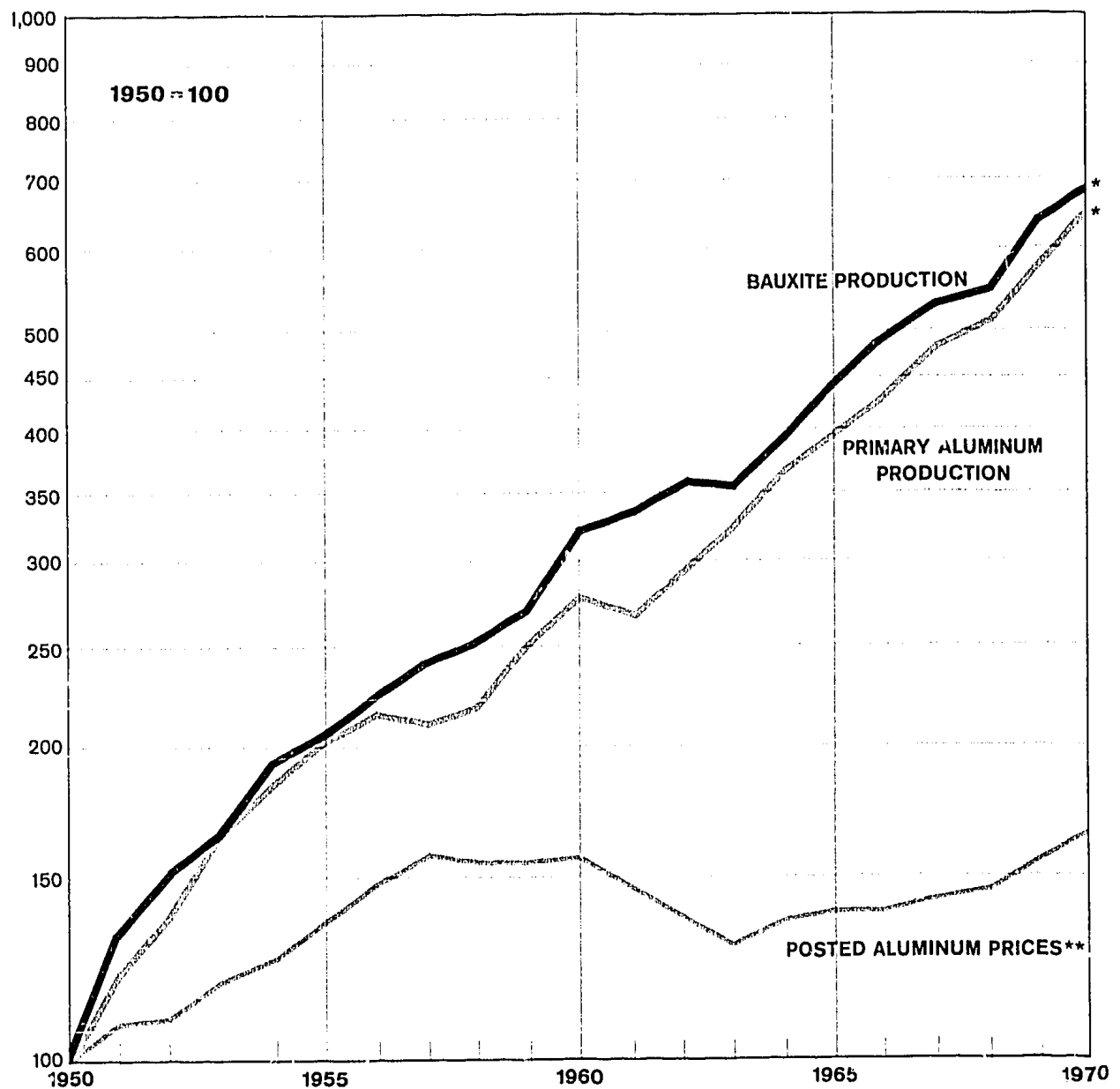
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Figure 3

### Indexes of Free World Bauxite and Primary Aluminum Production and Aluminum Prices



\*Provisional

\*\*New York average annual prices for 99% virgin ingot aluminum.  
Prices estimated for 1950, 1951, and 1970

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Australia -- have increased (see Figure 2). The shift reflects the development of new, high-grade, more easily exploitable deposits as well as diminishing reserves and rising operational costs in the older deposits. This shift has meant increased transport costs despite increased alumina refining near the source. Its effect has been the greatest for consumers in Western Europe, where the delivered costs of bauxite and alumina have risen well above the US costs, to about the Japanese level.

16. Although bauxite supplies in the Caribbean area as a whole are holding up well, to the substantial benefit of North American aluminum producers, a major shift in sources has occurred there too. The importance of Surinam and Guyana, the area's only producers in 1950, declined sharply with the development of extremely large and easily exploited deposits in Jamaica in the early 1950s, principally by Alcan, Reynolds, and Kaiser. Their shares were also decreased by the subsequent development of small deposits in Haiti by Reynolds and in the Dominican Republic by Alcoa. Production of very-high-quality bauxite in Surinam and Guyana has continued to rise, although the growth rate in Guyana has been restrained by increasing costs. The average depth at which bauxite is obtained in Guyana has increased to 110 feet, compared with the surface skimming required in Jamaica. Moreover, the need to reload ore on ocean carriers after shipment in smaller boats 65 miles down river adds to the f.o.b. costs of Guyanese bauxite.

17. The presence of high-quality and easily mined deposits in Australia has been known for some time, but large-scale exploitation was slow to get under way, partly because of the country's distant location. However, anticipating a growing Japanese demand and future needs in Australia and elsewhere, the six large aluminum companies joined various Australian, US, and West European firms in initiating extensive operations in the 1960s. As a result, bauxite production -- concentrated at deposits near Weipa, Queensland, and in the Darling Ranges in Western Australia -- grew from 0.4 million tons in 1963 to 9 million tons in 1970. The companies have invested heavily in alumina refining facilities to cut ore transport costs and now process about 45% of the bauxite locally.

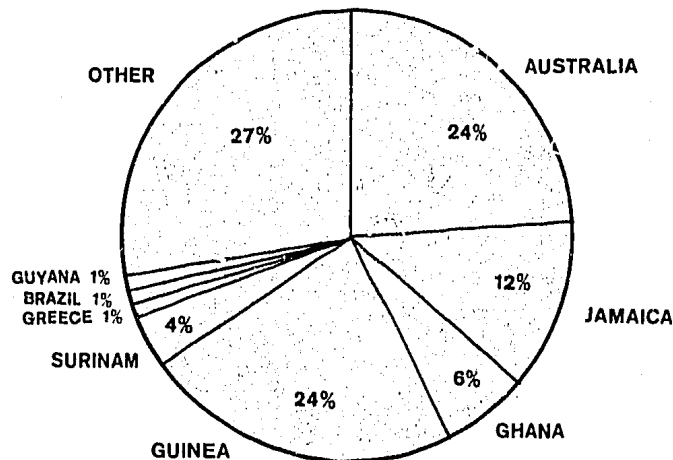
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Expansion Plans for 1971-75

18. Free World bauxite producers plan a 55% increase in output by 1975 (to about 70 million tons), continuing the growth rate of 1966-70. Provision also is being made to increase the share of bauxite refined into alumina near the source. Reflecting the distribution of Free World bauxite reserves (see Figure 4), most of the expansion will take place in Guinea, Jamaica, and Australia, raising their share of Free World output from one-half to two-thirds. No expansion is planned for Guyana, which has only 1% of world reserves.\* If these plans are carried out, the Caribbean area's share of Free World output will be cut to 43%, Africa's increased to 18%, Australia's raised marginally, and the shares of the remaining Free World regions reduced moderately.

Figure 4

**Free World Bauxite Reserves\*, by Major Country  
1970**



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\*Assured

\* At present production levels, Guyana's assured bauxite reserves would be exhausted in 15-20 years.

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19. The bauxite mining programs reflect plans for expanding primary aluminum capacity from 8 million tons on 1 January 1970 to 13 million tons on 1 January 1975, roughly a 60% rise. The greatest percentage increases will be in Japan and Western Europe. Guinea's expansion of bauxite production and increased alumina production in Jamaica and Australia are largely intended to supply aluminum smelters in Western Europe and Japan. If these plans are carried out, the US and Canadian share of Free World primary aluminum capacity will fall to about 44% and the West European and Japanese shares will increase to 28% and 15%, respectively. The share of the less developed countries as a group will rise from 7% to 11%, reflecting their desire to meet more of their own needs.

20. In Guinea, bauxite output will increase from 2.5 million tons in 1970 to 8.5-11.5 million tons in 1975. The largest operation, at Boke which is expected to be producing 6-7 million tons in 1975, is being developed at a total cost of about \$100 million (excluding infrastructure) by a consortium that includes Alcan, Alcoa, and Pechiney. A second operation, the government-owned project at Kindia, will have an annual output of 1-2 million tons of relatively low-grade ore by 1973. The Kindia project is being financed by the USSR, which is committed to taking 75% of the output under a 30-year contract. The Guinean government hopes to sell the remainder on the world market. A third operation at Fria, owned by a consortium including Pechiney, Alusuisse, and the British Aluminum Company (controlled by Reynolds), will be producing 1.5-2.5 million tons of bauxite annually by 1975, all of which will be refined into alumina near the site.\*

21. An expansion program in Jamaica is planned to double bauxite output to 22 million tons in 1975 and increase the share refined into alumina to 50%. This is essentially a continuation of projects begun in 1966-67. Over the next five years the aluminum companies, including Alcan, Reynolds, Alcoa, and Kaiser, expect to spend some \$300 million in Jamaica. The planned expansion in Australia will increase bauxite output from 9 million

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tons in 1970 to about 15½ million tons in 1975 and raise the share refined into alumina to about half. In addition to participating in the Gladstone alumina refinery, which has a capacity of 1.3 million tons, Alcan has a large bauxite deposit at Kimberly, Australia, that so far has not been slated for development through 1975.

22. The Communist countries plan to expand output of bauxite and other alumina-bearing ores sufficiently to support a substantial part of a projected 60%-70% rise in primary aluminum output by 1975. On the basis of past experience, only one-half to three-fourths of the expansion of aluminum output seems likely to be achieved. Even so, the USSR is likely to increase its bauxite imports during 1971-75 beyond the 2 million ton average of the last three years. If its plans for aluminum were realized, the USSR probably would increase its bauxite imports even more.

#### Burnham's Nationalization Moves in Guyana

23. Free World bauxite investment plans and marketing patterns may be upset, at least for a time, by the Guyanese Prime Minister's decision to effect full nationalization of the Demerara Bauxite Co. (DEMBA), a subsidiary of Alcan and source of three-fourths of Guyana's bauxite output. On 7 December 1970, Burnham presented DEMBA with an ultimatum calling for a majority share in the control and profits of the company, with compensation to be paid from the nation's share of future profits. Alcan rejected the demand but countered with a proposal to form a new joint company that would embrace DEMBA's present properties, which have a book value of about \$50 million, and government-financed additions costing \$25 million.

[REDACTED] Formal talks dragged on until February 1971, when Burnham broke them off and shortly announced in an Independence Day speech that he would seek legislation authorizing full nationalization of the bauxite industry.

24. The new law, passed by Parliament on 1 March by an overwhelming majority, permits the government to nationalize both DEMBA and Reynolds Guyana Mines,

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the latter a subsidiary of Reynolds Metals Company that accounts for the remaining one-fourth of output. The new law does not require a specific method of valuing the expropriated property or arranging for compensation; it permits these matters to be worked out by the government and the company. Burnham [redacted]

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[redacted] probably will hold off moving against the Reynolds subsidiary until the DEMBA nationalization has been completed.

### Guyana's Situation

25. Burnham will find it very difficult to obtain much in the way of short run economic benefits from nationalizing the bauxite companies. In large part, the economic impact will depend on compensation arrangements and, if negotiations break down, on Guyana's ability to keep the mines operating and to find alternative markets. The economy is heavily dependent on the industry. Bauxite and alumina exports amounted to \$60 million in 1969, contributing 47% of total earnings. Government revenues from the bauxite companies approximated \$5 million in 1968, or 9% of total revenues, and have grown a little since then.

26. Guyana probably would have serious problems in trying to operate the bauxite properties without foreign help, and it would clearly have considerable difficulty in selling most of its bauxite in Free World markets without company help. If Burnham offers compensation acceptable to the companies, they probably will facilitate an orderly transition to Guyanese operation and continue to purchase the bauxite and alumina indefinitely. In these circumstances, however, Guyana might benefit little from nationalizations for some time because compensation payments would absorb a large share of the increment in revenues.

27. If Burnham's compensation offers are unacceptable, the companies may promptly withdraw from the properties' operation and boycott their output. In this case, Guyana would be threatened with a major economic setback unless it could make alternative arrangements. Aside from the impact on export earnings and government revenues, it would

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face loss of US and Canadian economic aid (which has averaged \$8 million and \$2 million, respectively, in recent years), termination of its US sugar quota (source of an \$8 million subsidy in 1969), and a drying up of capital receipts from private and international financial sources, which recently have yielded a net inflow of some \$10 million annually. If not offset, such losses would sharply cut Guyana's import capacity and complicate the servicing of its foreign debt of about \$65 million.

28. If the major aluminum companies boycotted Guyanese bauxite, Burnham probably would first seek help from other Free World countries in operating the bauxite properties and marketing the ore. He has already approached the Indian and Japanese governments for operational help, although no definite arrangements apparently have been made yet. He probably could find customers for calcined bauxite for non-metallic use -- currently about 15% of output. It seems doubtful, however, that Burnham would be able to sustain sales of metallurgical-grade bauxite and alumina in the Free World over the next two or three years at anywhere near their present levels. Aluminum companies with stakes in the Caribbean area, which include most US firms, probably would go along with a boycott. In addition, companies associated with Alcan and Reynolds in development projects in Guinea and Australia, including most of the principal West European firms, might be induced to co-operate.

29. Thus Guyana's potential Free World market for bauxite and alumina probably would be limited largely to Japan.

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30. Burnham might seek Communist help despite its prospective limitations. He has already approached Yugoslavia for technical assistance, and he might offer bauxite to the USSR, with which Guyana established non-resident diplomatic relations in December 1970. The USSR probably would be willing to buy some Guyanese bauxite, as it has been importing an average of 2 million tons annually from all sources in recent years. The scope for Soviet purchases probably would narrow in two years or so, however, because of the scheduled beginning of imports from Guinea under the contract providing for annual shipments of 1-2 million tons. Nevertheless, rising Soviet import needs as output of primary aluminum increases probably would permit some imports from Guyana to continue. The USSR probably would not be in a position to take all of Guyana's output of 3.8 million tons and might not agree to pay hard currency for what it did take.

Company Positions and Options

31. Alcan probably would prefer, at least in the short run, to retain control of the marketing of bauxite and alumina from the DEMBA properties even under government ownership; it thus might be willing to compromise a little on the compensation issue. DEMBA's operations presently provide about one-third of Alcan's bauxite supplies, and part of its alumina refining facilities in Quebec are geared to processing only Guyanese bauxite. Reynolds, on the other hand, would have less incentive to compromise because its Guyanese bauxite operations are less important. The Reynolds operation produces 1 million tons annually -- about 15% of the company's total output -- and about two-thirds is sold to other firms, mostly to DEMBA. The book value of Reynolds' Guyanese properties is only about \$20 million, of which \$16.3 million is covered by a US government expropriation guaranty.

32. At the same time, both companies have a strong stake in trying to insure that the ultimate outcome in Guyana (which accounts for about 15% of Caribbean bauxite production) does not jeopardize their larger interests elsewhere in the area. Of primary concern are Alcan's large operation in Jamaica, which contributes another one-third of its bauxite supply, and Reynolds' Jamaican properties,

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which account for about one-half of its bauxite supply. Thus the companies are likely to pull out of Guyana and boycott its bauxite rather than accept token compensation and let Burnham win a victory that could provoke strong government demands on bauxite operations elsewhere in the region.

33. If the companies pull out, finding alternative bauxite supplies probably would not be a major problem. The US recession has caused some slackening in the growth of aluminum output and thus in the demand for bauxite. Until the market strengthens, Alcan and Reynolds probably would purchase some supplies of bauxite from other US companies. In addition, the US stockpile of about 17 million tons of bauxite and 0.3 million tons of alumina is a potential supply source for both companies. Alcan, for example, bought 0.2 million tons of bauxite from the US stockpile in February 1971. Although there would be some temporary dislocations, the companies probably could adjust fairly readily over the longer term to a loss of Guyanese bauxite by expanding output in Jamaica and Australia, where the necessary infrastructure already has been established. In addition, infrastructure currently being installed would facilitate output expansion by Alcan in Brazil and by Reynolds in Guinea.

#### Repercussions in Other Caribbean Countries

34. Whatever course the companies follow, Guyana's nationalistic actions could have widespread repercussions in the Caribbean area. The governments of the other four bauxite-producing countries naturally are seeking greater revenues, mostly to finance public investments. Moreover, except for Haiti, they are under pressure from militant black nationalists and other opposition groups to become less subservient to white foreign economic interests, to claim greater participation in resource development, and to obtain larger profit shares. The pressures in Jamaica have been by far the strongest. Any outcome clearly favorable to Guyana will stimulate these demands and possibly bring pressure for partial nationalization. On the other hand, if the companies make Guyana's nationalization actions self-defeating economically, the countries' demands probably would be tempered. In

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either case, however, domestic political pressures to follow Burnham's example, especially in Jamaica, probably will force the governments of most of the countries to increase their demands over the next several years.

#### Implications for the World Bauxite Industry

35. Burnham's moves in Guyana and their probable repercussions in the Caribbean area almost certainly are causing the aluminum companies to review their bauxite investment plans. The companies involved in Jamaica, especially, may be induced to slow their expansion programs there. Even before Burnham's nationalization moves, the Anaconda Company cut back on its participation in a Jamaican alumina-refining consortium because of the political uncertainties. At the same time, various companies probably will step up their expansion programs in Australia and Guinea and may initiate bauxite investments in Ghana.\* For example, Alcan may well advance its plans for beginning exploitation of its Kimberly deposit in Australia.

36. Over the next several years, government demands in the Caribbean area for greater profit shares probably will exert upward pressure on bauxite costs and aluminum prices, especially in the United States and Canada. Moreover, if the industry cuts back its investment plans in the Caribbean and expands them in Australia and elsewhere, aluminum prices may get a further boost because of increased transport costs. Although greater shipping distances will eventually be partly offset by expanded alumina refining near the mine, there may be a substantial time lag because bauxite output can be increased much more rapidly than alumina refining capacity.

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